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ACCOUNTING IN ITS RELATION TO ECONOMICS.

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“Accounting,” according to Lisle,¹ “is the science which treats of the methods of recording transactions² entered into in connection with the production and exchange of wealth, and which shows their effect upon its production, distribution, and exchange.” This definition by one of the foremost Scottish accountants, while obviously incomplete, possesses the merit of calling attention to the fundamental economic principles upon which accounting is based. Whatever the definition adopted, there is universal agreement that economics is the general science of wealth. This idea is always present, although the phraseology differs. Sometimes economics is called “the science of industrial relations”,³ or “the science of business activities”, or “the social science of business”.⁴

The two subjects are thus intimately related in that they each deal with the same subject matter, namely,—wealth, its production and distribution, together with the economic relations necessarily involved. Economics, however, differs from accounting in that it treats of the nature of wealth and analyzes the conditions under which it is produced and distributed among the members of society. It describes the process of wealth production, the conditions which facilitate the division of labor and ex-

¹ Lisle, *Accounting in Theory and Practice*, p. 1.

² The word “transactions” includes transfers of materials from one department of a manufacturing establishment to another, as well as those where an actual sale is effected.

³ Seligman, p. 4.

⁴ Seager, p. 1.

change of products, and the advantages of each; it asks the question—How is the wealth produced by society as a whole shared by the factors of production and the individuals who compose each factor? The answers of the economist to all of these questions are indefinite from the quantitative standpoint. He finds by historical investigation that wealth may be produced without the aid of capital; that, however, such a method is slow and inefficient compared with those where capital joins with labor and natural resources. The economist as such cannot tell how much more efficient. For this information he must turn to his co-worker in economic investigation—the accountant. The economist analyzes the process through which wealth, created by the coöperation of producing agents, is finally traced to the possession of individuals who make up the producing society. Here again he cannot tell how much goes or ought to go to any one class of claimants, or to any individual of a class. The accountant must be called in, and within certain limits he is able to measure the contribution of each factor of production and each individual composing each factor. He also is able to determine the share which each class of producers and each individual producer gets after the process of distribution is completed. By comparing these results he is able to answer the questions which are at the heart of the social unrest of all ages, namely,—Does the producer in a complex industrial society receive as a consumer the equivalent of that which he creates as a producer? As qualitative chemistry must of necessity precede and predetermine the conditions under which the quantitative chemist works, so the economist must first analyze economic society, differentiate processes, classify wants, determine the nature of wealth, trace out the intricate economic relationships in both production and dis-

tribution, and, from his analysis of an economic society and his observation of its workings, formulate economic laws.

Side by side with the economist, the accountant, working on the foundations laid by the economist in his analysis, attempts to determine the economic relationship of the members of an economic society with definite quantitative results. The economist finds that land assists in production in the form of rent. The accountant determines how much the land produces and therefore how much it ought to receive.⁵ The accountant also finds how much land actually does receive, and, putting these results side by side, the economic philosopher may then compare them and ask the question—Why are they not equivalent?—and answer it if he can. Applying the same methods, he determines the creative powers of labor and capital, and again finds the amount of their share in the actual distribution of wealth. In a similar way the economist may then discuss the relationship of the contribution of labor and capital respectively, in their joint production, to their shares in actual distribution. The economist may discover the reasons why one factor in production does not receive in any particular case an equivalent of the share it produces, and, having found the conditions that have brought about this maladjustment, he may advise

⁵ In actual practice, entrepreneurs bid against each other for the use of the more desirable locations and for the more fertile plots of land. Each with the aid of the cost accountant is able to determine with very great exactness the cost of conducting his business at any one of several locations. He is also able to estimate approximately the volume of business which he will be able to carry on and the prices he will be able to maintain. He therefore knows what he can pay, and the competition among many entrepreneurs in different lines of business forces the rent actually paid up to a point approximately equal to its producing power in the line of business where the land is most efficient. The accountant finds the limit beyond which the entrepreneur cannot go and be solvent.

statesmen and administrators in regard to the kind, nature, and amount of governmental regulation⁶ that is necessary to properly adjust such conditions and permit a more equitable distribution of wealth. It will be noticed that in the practical application of economic principles the economist is absolutely helpless without the aid of the accountant, and it is to be observed that the economists who have contributed the most to the abiding principles of political economy as accepted today, have in general been those who have tested their economic principles by the exact data which the accountant alone can furnish.

Accounting not only applies economic principles to economic conditions and determines from the quantitative standpoint existing economic relationships both in the production and distribution of wealth, but in turn furnishes the facts upon which economic laws are actually formulated. For example, the economist affirms that profits tend to be eliminated in the static state; this principle might possibly have been evolved in the mind of a theorist entirely unacquainted with business transactions and their accounts. It is, however, true that this statement is based upon actual accounting in a large number of business enterprises as observed by many economists.

⁶ Neither the Interstate Commerce Commission, the state commissions, nor the courts have any scientific basis for the regulation of railway rates in accordance with economic principles except so far as they adopt and apply proper methods of uniform accounting. The same is also true of public service companies in general, insurance companies, and banks. The work of the Bureau of Municipal Research has been fruitful in bettering city administration because it has applied scientific accounting methods in connection with the principles of municipal administration. For an application of the principles of accounting to a concrete problem in the regulation of railway rates, see an article by the author of this paper, entitled "The Legal, Economic and Accounting Principles Involved in the Judicial Determination of Railway Passenger Rates," in the *Yale Review* for February, 1908.

through an inspection of the data furnished by the accountant. The same statement may also be made in regard to some of the more recent contributions to the theory of capital, income, and monopoly profits.

In what has been said the attempt has been made to draw in rough outline the place that accounting will take in the future development of economic theory. Today, for various reasons, accounting falls far short of its possibilities in this respect. In the first place the economists have generally had neither the opportunity nor the inclination to master the principles and practice of accounting. They have, as a class, therefore, contented themselves with making general statements, many of which have been recast from time to time as the actual facts of business relations have been disclosed through the more scientific application of accounting methods; and the process is not yet ended. Secondly, accountants are not usually economists, and therefore their work, lacking the scientific character which the economist demands for his purposes, often has little of value to offer when cast in its present form. An income account, as usually drawn up, in which the various items are thrown together without reference to their economic character, is well nigh valueless for the purpose of determining the contribution of the economic factors to the income produced. The same is true of the other principal accounts which the accountant prepares for the information of the business house for which he is employed; and, finally, the accounts, being drawn up for the purpose of protecting the proprietor's interests, are naturally enough arranged to show only his capital, his expenses of production, and his net earnings. The economist whose chief interest in the cost of production is from the standpoint of society, often finds little in the books of a business enterprise to help him

in his work. An industrial society is, however, made up of individual business units, and the economist who is unable to grasp the inter-relations of these business units and to make the adjustments in the accounts of such business units as is necessary in order to make up the balance sheet and income account of society as a whole,⁷ neglects to take advantage of one of the most valuable methods for establishing economic principles and economic laws and eliminating the errors which the economists who rely wholly on abstract reasoning are liable to commit.

If the principles maintained in this paper are valid, it naturally follows that:

1. Courses in accounting should be established in each of the institutions of higher education by the existing departments of economics, thus maintaining the integrity of the two branches of the general science of wealth; and students who are looking forward to careers as economists, as well as those who expect to enter business life, should elect such courses, as a part of their economic training. Candidates for the doctor's degree in economics especially ought to be examined in the elements of accounting, for the reason that such an addition to the usual course compels accuracy in economic thinking, and again since it makes the theory of production and distribution clearer than is possible by the ordinary methods of exposition.

2. All accountants, and especially those who are granted the degree of Certified Public Accountant by states or by universities, ought to be trained in the principles of economics. Accounting being the application of economic principles to definite business transactions, it is obvious that if this work is to be raised to a level with the

⁷ See Fisher, *Nature of Capital and Income*, chapters on "Capital Summation" and "Income Summation".

learned professions those who enter this field must be masters of the principles which they are daily applying in specific cases.

3. The principal statements made by accountants, namely, the balance sheet and the income account, should be drawn up in accordance with economic principles,—that is, so that economic units of the same kind should be collected into the same group. For example, the balance sheet and income account would then be drawn up in the following form:

INCOME ACCOUNT

Inventory, Jan. 1, 1908	\$ 1,000 00	Sales	\$15,000 00
Purchases for year	<u>10,000 00</u>	Less Freight Outward	
Total	<u>11,000 00</u>	and Discounts	<u>500 00</u>
Less Inventory, Jan. 1, 1909	<u>1,200 00</u>		
Cost of goods sold	<u>9,800 00</u>		
Freight and Express Inward	<u>500 00</u>		
Total Cost of Goods at Plant	<u>10,300 00</u>		
Earnings of Establish- ment	<u>\$ 4,200 00</u>		
	<u>\$ 14,500 00</u>		<u>\$14,500 00</u>
Rent	<u>16$\frac{2}{3}$ %</u>	Earnings down	<u>\$4,200 00</u>
Int. on Cap.	<u>19$\frac{1}{2}$ %</u>		<u>800 00</u>
Wages	<u>59$\frac{11}{12}$ %</u>		<u>2,500 00</u>
Net profits	<u>4$\frac{16}{21}$ %</u>		<u>200 00</u>
	<u>\$4,200 00</u>		<u>\$4,200 00</u>

BALANCE SHEET

ASSETS		LIABILITIES
1. Investment in Land	\$10,000 00	1. Obligations to
2. " of Capital		Creditors
Buildings	\$12,000 00	Mortgage \$15,000 00
Tools & Mach	2,000 00	Accts & Bills
Merchandise	1,200 00	Payable 2,000 00
Accts & Bills		Total \$17,000 00
Receivable	1,500 00	2. Proprietor's Interests
Cash	<u>5,000 00</u>	Cap. Stock 15,000 00
3. Franchise	<u>5,000 00</u>	Undivided Profits <u>4,700 00</u> 19,700 00
	<u>\$36,700 00</u>	<u>\$36,700 00</u>

This would enable business men to know what percentage of the cost of production was due to rent, interest, and wages respectively, and when therefore it would be more economical to increase the interest account by adding improved machinery rather than the wage account by adding more laborers. With the usual arrangement of the income account, this important fact is of course impossible to ascertain. At the same time, such an arrangement of the income account would enable economists to make use of the facts of business activities for the establishment of new economic principles or the correction of theories formulated without the aid of the facts which such statements would bring to light. In this way a gain to both economic theory and sound business principles would follow.

The evolutionary forces, especially active and persistent in business, are steadily bringing these highly desirable ends to a welcome fruition. The process is, however, a slow one, and I wish therefore to close this paper with the suggestion that this Round Table, the first formal gathering of economists and accountants in the United States for the purpose of engaging in a scientific discussion of the relationship of the two subjects and their future development, might render a signal service to both professions, and to sound business progress at the same time, by inaugurating a movement looking toward the fuller application of economic principles in the formal presentation of the accounts of business establishments.⁸

⁸The following problem from *Lisle's Accounting*, page 246, has been selected in order to further illustrate the principles above stated. The first solution by the writer of this paper shows, first, the earnings of the establishment as a whole, and, second, the distribution of the earnings to land, to capital, to labor, and to the entrepreneur interests. Owing to the lack of data that would have been available had the books been kept in accordance with the

Problem: The directors of a manufacturing company, before the closing and auditing of the books for the half-year ending December 31, declare out of the net earnings of the company a dividend for the half-year of 4 per cent on the preferred stock of \$40,000, and of 3 per cent on the ordinary stock of \$40,000. There has been brought forward from the last half-year an undivided balance of profit of \$1600, and after the audit of the books the trial balance is found to be as follows:

TRIAL BALANCE AS AT 31ST DECEMBER

Preferred Stock	\$40,000 00
Ordinary Stock	40,000 00
Sales	87,670 00
Bills Payable	10,400 00
Accounts Payable	4,000 00
Profit and Loss Account	1,600 00
Property and Buildings	\$13,000 00
Plant and Machinery	16,000 00
Patents and Goodwill	32,000 00
Stock on hand, 1st July	11,600 00
Purchases	33,000 00
Wages	35,200 00
Coal	2,400 00
Salaries, general	4,400 00
" management	2,000 00
Insurance	350 00
Repairs	400 00
Discount and Allowances	2,500 00
Freight	600 00
Discount and Interest	300 00
Cash in Bank	3,200 00
Investments	6,200 00
Miscellaneous Expenses	1,720 00
Book Debts	18,800 00
	<u>\$183,670 00</u>
	<u>\$183,670 00</u>

methods proposed, it has been assumed that the term "property and buildings" includes land and any investment upon it which may properly be included under that title; that "plant and machinery" are capital in the limited sense in which that term is used; that "miscellaneous expenses" are in reality wages and therefore properly included under that head. In the problem and its solution the dollar mark has been substituted for the English pound. Since the company owned the land and furnished part of the capital invested upon it, an arbitrary rate of return has been assumed upon these investments.

The stock on hand December 31 is \$10,600. Prepare profit and loss account and balance sheet from the above, giving effect in the accounts to depreciation at the rate of six per cent per annum on plant and machinery, and an allowance of five per cent on book debts to provide for bad accounts; also create a liability in the balance sheet for the dividends declared as above stated.

The second solution by Lisle, while not drawn up in accordance with the best practice, is a fair example of the usual method of grouping the various items in the ordinary income account and balance sheet.

It will be noticed that the solution by the writer gives all of the information furnished by the usual method and in addition shows, first, what the establishment earns, and, second, the share of the earnings which go to the several factors of production. This would enable the statistician in the course of a few years to prepare exceedingly valuable tables for the guidance of the business manager in directing the affairs of the company.

FIRST SOLUTION BALANCE SHEET

ASSETS		LIABILITIES	
Dec. 31, (1) Capital Investment	\$ 3,200 00	Dec. 31, (1) Due Creditors	\$ 10,400 00
(a) Cash	10,600 00	(a) Bills payable	4,000 00
(b) Mdse Inventory		(b) Accts " Total	14,400 00
(c) Accounts \$18,800 00		(2) Due Shareholders	
Less 5% 940 00	17,860 00	(a) Undivided Earnings 2,580 00	
(d) Plt and Machinery 16,000 00		(b) Dividends half-year 1,400 00	
Less 3% 480 00	15,520 00	(c) Preferred Stock 40,000 00	
Total		(d) Ordinary " Total	40,000 00
(2) Other Investments			
(3) Land Investment			
(4) Patents and good will			
			\$83,980 00
			<u><u><u><u></u></u></u></u>
GENERAL INCOME ACCOUNT			
(1) EARNINGS OF ESTABLISHMENT			
		Dec. 31 Sales	\$87,670 00
		Less Disc. and allowances	\$2,500 00
		Less allowance for bad debts	940 00
		Net receipt from sales	3,440 00
			<u><u><u><u></u></u></u></u>
July 1, Stock on hand	\$11,600 00		
Purchases			
	\$33,000 00		
	10,600 00		
	22,400 00		
Less inventory Dec. 31			
Coal			
	2,400 00		
	600 00		
Freight			
	480 00		
Depreciation			
	400 00		
Repairs			
	350 00		
Insurance			
Cost of goods sold			
			\$38,230 00
Earnings of establishment			46,000 00
			<u><u><u><u></u></u></u></u>
			\$84,230 00
			<u><u><u><u></u></u></u></u>
			\$84,230 00

SECOND SOLUTION

PROFIT AND LOSS ACCOUNT FOR HALF-YEAR

To Cost of Goods :—	By Sales	
Stock on hand, July 1	\$11,600 00	\$87,670 00
Purchases	33,000 00	
	<u>\$44,600 00</u>	
Deduct stock on hand, December 31	10,600 00	
	<u>\$34,000 00</u>	
To Wages	35,200 00	
To Coal	2,400 00	
To Salaries, general	4,400 00	
To " management	2,000 00	
To Insurance	350 00	
To Repairs	400 00	
To Discount and allowances	2,500 00	
To Freight	600 00	
To Discount and interest	300 00	
To Miscellaneous expenses	1,720 00	
To Allowance for bad debts	940 00	
To Depreciation	480 00	
	<u>\$85,290 00</u>	
To Profit for year	2,380 00	
	<u>\$87,670 00</u>	<u>\$87,670 00</u>
To Dividend for half-year on preference shares	\$ 800 00	By Balance 1,600 00
To do. on ordinary shares	600 00	By Profit for half-year as above 2,380 00
To Balance	<u>2,580 00</u>	<u>\$3,980 00</u>

BALANCE SHEET

LIABILITIES	ASSETS
Accounts payable \$ 4,000 00	Book debts \$18,800 00
Bills payable 10,400 00	Less allowance for bad debts 940 00
Due to shareholders :	
Preference stock \$40,000 00	Stock on hand 10,600 00
Ordinary stock 40,000 00	Investments 6,200 00
Dividend for half-year on preferred stock 800 00	Plant and machinery \$16,000 00
	Less 3 % 480 00 15,520 00
Dividend for half-year on ordinary stock 600 00	Property and buildings 13,000 00
Undivided profit 2,580 00	Patents and good will 32,000 00
	Cash in bank 3,200 00
	<u>\$98,380 00</u>
	<u>\$98,380 00</u>